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ABSTRACT

Twenty students were interviewed after transferring to the National Technical Institute for the Deaf (NTID) from colleges that offered no specialized programs for hearing-impaired students. The students reported that previous teachers were not aware of their learning needs, reading materials were difficult to comprehend, classes were too large and fast-paced, and support services were inadequate. Students chose NTID because of its wide range of educational programming in technical fields, its reputation for providing a good education, and the unique social environment with both hearing-impaired and hearing students. The students felt that NTID teachers understood the needs of deaf learners and that classes were small and slower-paced, focused more on applied rather than theoretical instruction, and used easier reading materials. Based on information from the interviews and supported by findings from other research, a postsecondary educational model is proposed that provides a continuum of educational opportunities, ranging from the "special" classroom to a totally mainstreamed environment with only basic communication supports required by the student. Elements highlighted in the model include teacher-student interaction and modified curricula, class size, support services, and the size of the hearing-impaired student body. (JDD)

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Alternatives in Mainstreaming: A "Range of Options" Model for the Postsecondary Hearing-Impaired Student

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Abstract

Public debate about the best environment for educating the hearing-impaired student is long-standing. Current philosophy advocates a "mainstreaming" approach wherein students participate in regular classes with communication supports such as interpreters, notetakers, and tutors. This paper suggests an alternative model of postsecondary education that offers a range of communication supports and learning environments on one campus. The model is based on interviews with 20 students who transferred to the National Technical Institute for the Deaf at Rochester Institute of Technology from colleges that offered no specialized programs for hearing-impaired students.

Alternatives in Mainstreaming: A "Range of Options" Model for the Postsecondary Hearing-Impaired Student

Background and Purpose of Study

A steady increase in the numbers of transfer students to the National Technical Institute for the Deaf at Rochester Institute of Technology (NTID at RIT) prompted researchers at the institute to study the transfer student phenomenon. A series of studies were conducted including a demographic profile of the transfer students (MacLeod-Gallinger, 1986), a survey of the students (DiLorenzo & Elliot, 1986), and an interview study with a subsample of the students (Foster & Elliot, 1986). The Foster and Elliot study revealed some unexpected data relevant to educational models for the hearing impaired. This paper is based on findings of the Foster and Elliot study.

Public debate about the "best" educational model for the hearing impaired is long-standing (Lane, 1984). Part of the controversy concerns the educational environment. Should students be segregated, or should they learn in an environment that integrates, or "mainstreams" them into the hearing world?

The enactment of Public Law 94-142 renews this debate. An important stipulation of this legislation is that students are educated in the "least restrictive environment." Many school systems have interpreted this to mean that students who were once

segregated in special classes or special schools must now be brought into the traditional classroom, and that their special needs would be attended to in the traditional classroom environment.

Literature on accomplishing mainstreaming usually has focused on methods for incorporating students into the existing educational model (e.g. Salend, 1984). For the hearing impaired, this strategy typically implies providing communication supports like interpreters, tutors, and notetakers while leaving the student in the traditional classroom (Jones, 1984). This current concept of mainstreaming the hearing impaired hinges on the notion that providing these essential communication supports is sufficient support for the hearing-impaired student. But this is only one interpretation of what is meant by the "least restrictive environment" of PL 94-142. Reynolds and Wang (1983), and Stainback, Stainback, Courtenage & Jaben (1985), suggest that the educational environment should be modified to accommodate the students' needs instead of asking the student to conform to the traditional educational environment. Despite the magnitude of the debate on the appropriate environment for educating the hearing-impaired student, few studies have been conducted exploring the ways that providing communication supports or other elements of the educational environment affect the hearing-impaired student (Mertens, 1985). Even fewer articles address the particular situation of the postsecondary, hearing-impaired student (Saur, Hurley & Popp, 1983).

A recent paper by Walter and Welsh (1985) emphasizes the importance of the supportive educational environment for hearing-impaired students for degree attainment. They found a high correlation between degree attainment and post-graduation job levels of alumni and between degree attainment and earnings after graduation. It is in the best interest of the students, therefore, that colleges provide adequate supports for degree attainment. Walter and Welsh found that at least 97% of the hearing-impaired students at RIT required some type(s) of support including "extensive remedial education, systematic alterations to the delivery of instruction, and other services" (p. 23) in order to attain their college degree.

Mertens (1985) and Saur and Stinson (in press) review articles that emphasize personal characteristics of the student which are attributed to "successful mainstreaming." Personal characteristics include factors of family background (Mertens, 1985), communication skills, cognitive skills, previous academic achievement, and prior educational experiences (Saur & Stinson, in press). Mertens (1985) offers no standard criterion for successful mainstreaming. Saur and Stinson (in press) define successful mainstreaming as the attainment of a college degree.

In Mertens (1985) literature search, she was unable to locate any research studies pertaining to other factors (aside from personal characteristics) which may contribute to success in a mainstreamed environment. Conspicuously absent were articles

about the effects of instructors, curricula, or the school environment on mainstreamed students. Saur and Stinson (in press) also noted some deficiencies in the literature on mainstreaming. They too, noted a lack of research on the role of the instructor in mainstreaming. In addition, the authors stress the need for increased attention to the impact of mainstreaming on social interaction between hearing impaired and hearing students.

The impact of mainstreaming on social interaction is felt both inside and outside the classroom, but to date, there has been little coverage of this subject in the mainstreaming literature. Saur, Hurley, and Popp (1983) have suggested that the classroom instructor plays a large role in facilitating interaction between hearing impaired and hearing classmates. Ladd, Munson, & Miller (1984) observed mainstreamed high school students over a two-year period and found that in-class interactions with hearing students and positive feelings about the hearing-impaired students by their hearing peers gradually increased over time. However, the authors did not suggest ways in which social interactions in the mainstream environment could be encouraged.

Predicting the course of postsecondary education of the hearing impaired for the future, Jones (1984) suggests a critical number of hearing-impaired students are necessary in the mainstream setting. He proposes that the "critical mass" needs to be about 150 students at the two-year community college, and about 100 students at the four-year college. He reasons that the

critical mass will provide optimal social interaction for hearing-impaired students (with other hearing-impaired students), and will give reasonable cost-effectiveness for providing a full range of support services. Our research suggests that this critical mass may also be instrumental in making hearing persons (teachers and students, alike) more aware of what it means to be hearing impaired. This understanding may promote interaction between hearing and hearing-impaired persons.

In this paper we will discuss models of educating the hearing impaired at the postsecondary level. Our discussion is based on interviews with the consumers of education -- the students themselves. We have had the opportunity to speak with hearing impaired, postsecondary students who attempted traditional mainstreaming programs -- i.e. programs that provide some types of basic communication supports only. These students transferred to NTID at RIT, and in so doing discovered a postsecondary environment that was very different from their prior schools. Based on information from these interviews and supported by findings from other research, we propose a postsecondary educational model that provides a range of educational opportunities -- from the "special" classroom, through a totally mainstreamed environment with basic communication supports as required by the student. Elements highlighted in the model include teacher-student interaction and modified curricula, class size, support services, and the size of the hearing-impaired student body.

In the following section, the methods used to collect data for the study are described. In the section on Results, the transfer students' experiences at the traditional college and at NTID are presented, including their perceptions of differences between the two settings. The data are reviewed in light of post-secondary models of education for hearing-impaired students in the Discussion section of the report. The paper is concluded with a description of the limitations of the current study and recommendations for future research.

Methodology

Students transfer to NTID from colleges in one of the following categories: (1) college for the deaf (Gallaudet is the only college in this category), (2) colleges with established programs for the hearing impaired as listed in the College and Career guide (Rawlings, Karchmer & DeCaro, 1983) and (3) "traditional" colleges, or colleges which do not have special programs for hearing-impaired students and offer limited support services. Subjects for this study were selected from a subgroup of 56 students who transferred to NTID within the last three years from a traditional college (category 3) and who are currently enrolled in a NTID program.

Data for this study were generated through open-ended interviews with twenty transfer students. All 56 students in subgroup category 3 were invited to participate in individual

interviews. Volunteers were accepted on a "first come" basis. The interviews were semi-structured in that similar topics were covered with each subject, but the ordering and phrasing of topics varied. Subjects were asked to discuss their experiences at the previous college, decision to transfer, and experiences at NTID.

Each interview lasted between 15 and 45 minutes. Interviews were recorded on audio tape. Interpreters assisted with communication and voiced for participants whose speech could not be recorded clearly. Interviews were transmarked verbatim, then coded and analyzed for recurring patterns and themes following qualitative methods described by Bogdan and Biklen (1982). The findings are presented in the following section.

Results

The purpose of the interviews was to learn why the students transferred to NTID. In this section the major themes which emerged from the interviews are presented. Findings are organized under three sub-headings: (1) experiences at the previous college, (2) reasons for transfer to NTID, and (3) student perceptions of the differences between classes at the "regular" colleges and at NTID.

Experiences at the Previous College

Students discussed both positive and negative experiences at their former colleges. Some students spoke of understanding

teachers who gave them the individual attention they requested, and several had good interpreters. However, most of their comments were about negative experiences with teachers, support services, the college environment, and the social life.

Many students complained about the teachers at their previous college. They said that teachers spoke too quickly and unclearly, or that they would talk with their backs to the class. Students said that teachers were not sensitive to the needs of hearing-impaired people and therefore did not understand their requests for repetition. Some students felt uncomfortable asking questions in class. Others were frustrated because their teachers treated them as if they could hear. The following quotations illustrate some of the problems which students encountered with teachers in the regular college class:

> Some of the teachers (at regular college), they had no experience with the deaf... they talk real fast. If I had a question I'd have to raise my hand and stop the interpreter, stop the teacher. Then they'd explain, and I'd have to turn over here (look back and forth)... and it was really a pain.

> ... If I had a hard time understanding something, they (teachers) would get very frustrated. They start yelling at me, banging on the desk.

... After a while I was getting frustrated in the classes. I'd go up to my lab teacher and tell them that I don't understand what they're saying and that they had to repeat possibly the whole thing to me individually. They don't realize that my hearing is so severe because of my speech (ability)... so they'd get the wrong idea, and so they just didn't believe me... they couldn't understand and some of them weren't really sensitive to how I felt... I don't expect everybody to have an awareness of deafnesss, but... they didn't take their part... and help you out or nothing. They just sit back and did their job just once and ... that was it.

Most of the teachers are really fast talking. I had classes where they don't stop and ask questions, they say wait til after class. I could take notes but then I'd miss what the interpreter was saying... They offered me notetakers, but still I couldn't tell her to write down questions for me.

One student resolved problems with a teacher by dropping the class:

I took care of myself. I had no trouble with the teachers. Some teachers were bad -- I dropped them... (for example) the teacher talked with a pipe in the mouth and I tried to find a notetaker. I failed so I decided to drop it out.

Another worked harder out of class to make up for information missed in the lecture:

> When I was going to (regular college) I put a lot of hours into it out of class. I'd go home and read and study a lot because a lot of time I can't understand everything in class and I have to depend on the book... sometimes I miss things when the teacher turns around and writes things on the board and talk. Most times I miss what they're saying.

Students were disappointed with other aspects of the educational environment. They often found textbooks and exams difficult to comprehend. Additionally, an almost universal complaint was that courses were too fast-paced -- this included the teacher speaking too quickly and the quantity of information presented during the class. Sometimes even a concerned and sensitive teacher could not compensate for the problems hearing-impaired students confronted in a mainstreamed class, as illustrated by the following quotation:

> The teacher was very helpful. He helped me any time, and as much as he can... but towards the end, he went too fast. He was throwing too much homework on us. I couldn't keep up. Some information I missed, I couldn't understand clearly. He couldn't get the idea across to me... that was a hard time.

Students found classes too large, an issue especially troublesome for oral students because they relied primarily on

lipreading at the regular college and needed to sit at the front of the class. As the following story illustrates, being late for class can have serious consequences for deaf students:

> The classes are very, very big (and) there are many students. I have to get there real early to get the front row. Most of the time I have to walk from one class to another and other students get there before I do. So half the time I would end up in the middle or in the back row, and then I would have a hard time understanding the teacher.

Support services were often inadequate at the mainstreamed college. Many students complained about the lack of skilled interpreters. Sometimes interpreters were only available for particular classes, which limited the hearing-impaired student's choices severely, as illustrated in the following quotation:

> I had trouble with the interpreters, their limited interpreting. I couldn't pick what I wanted... for example, in math, say I said I want to take algebra in the afternoon. They (support services) said "Nope, you can only have the morning. That's all. Not the afternoon." So I was really stuck.

Good notetakers and tutors who know sign language were rare, as the following excerpts illustrate:

> They did have enough (interpreters and notetakers)... but the notetakers they gave me I had difficulty reading because of their handwriting, and I told them "Please write clearer." But the way they write still I couldn't understand it... so that was difficult for me to read and difficult to understand and I tried.

> The interpreter did very well, but they could not help me with the studies. You can get some help from the tutor but the interpreter had to be there... (because) the hearing tutor can't help me without the interpreter. So there would be three of us there... (so) the tutor didn't really help a lot.

Sometimes the providers of support services demonstrated a severe lack of understanding of the needs of hearing-impaired students, as illustrated in the following story:

> There was a teacher, he would never speak up. I kept begging him. I said "you'll have to talk up a little louder." We were in a big classroom, not an ordinary small one. He said "all right, all right." I was sitting in the front seat facing him and I still couldn't hear. I went there (support services office) and asked for help... (I told them) "I can't hear the teacher." They told me to take down information on a tape recorder. I told them "I can't understand what's being said on the tape recorder. (They told me) "I'm sorry, we can't help you."

Many students had little or no social life at the traditional college. First, for students who lived at home, social interaction was limited by the very nature of the commuter school. Second, the students we interviewed spent most of their evenings and weekends studying in order to keep up with their classes, and had little time to socialize. Third, the mainstream experience itself severely limited students' social lives. Students often had difficulty communicating with hearing students, and there were few hearing-impaired students in the mainstream setting. The following excerpt summarizes some of the frustrations which hearing-impaired students face in interactions with hearing peers:

> Social life... lousy, lousy, lousy... we'd smile at each other. They (hearing students) know that I'm deaf and ... they don't sit down and really get down and talk like (they would ask) "how are you feeling, how is school, how many sisters and brothers do you have"... tell some jokes and stuff... (then) some of the hearing people might come up... and they sit there talking and all of a sudden I'm out of the picture... then I'll leave and I'll say "I'll see ya later" and I can tell just by their expression, their body language, and their movement that they're more fascinated with hearing than me.

In sum, the transfer students were disappointed with the traditional college. Teachers were not aware of their needs as hearing-impaired learners, reading materials were difficult to

comprehend, and classes were too large and fast-paced. Support services were often inadequate or missing altogether. In addition, these students frequently felt socially isolated and lonely.

Reasons for Transfer to NTID

Students chose NTID for a variety of reasons. They had heard of its reputation from counselors, friends, teachers, speech therapists, and relatives. NTID was recommended for the wide range of educational programming in technical fields and for its job placement record.

Many students came to NTID because they had heard about its unique social environment. They wanted an opportunity to meet and interact with both hearing impaired and hearing students. These students were tired of being one of a handful of hearing-impaired students in a "hearing" college. Some came to NTID in search of a "deaf identity," or as one student told us, to find "the missing piece of the puzzle." Others wanted an alternative to the social isolation they had experienced at home and at the regular college. As one student put it, at NTID he can "... talk about anything from A to Z... (whereas) at home we talked about A to B." These students were unwilling to enter a segregated deaf college because they wanted the option of participating in mainstreamed programs. To them, NTID represented the best of both worlds.

Most important, students came to NTID because they expected to receive a good education. All the students in our study had experienced frustration and/or failure in the traditional college.

They wanted a college education, and believed they could achieve this goal at NTID. Most of these students had expectations about the types of support services they would find here. They were not equally aware of the essentially different educational model offered through NTID. In the following section, we will explore students' reactions to NTID and their description of the differences between classes at their first college and classes at NTID.

Differences Between Classes at the Traditional College and at NTID

When we asked students to tell us why they transferred to NTID, they frequently talked about "support services," which they described as interpreters, notetakers, and tutors. However, when we asked them how their NTID classes differed from classes in their previous college, they described differences in the total educational environment.

As reported earlier in this paper, students said the traditional college classes were too large. The lectures were abstract or theoretical, and the pace of instruction too fast. They had trouble keeping up with the reading, and the vocabulary was too difficult for them. Teachers were frequently inaccessible for out of class help. The hearing-impaired student often left class confused about the lecture and uncertain of work assignments.

Communication in the traditional college class was a problem for students. Frequently teachers had little understanding of deafness, and as a result did not speak clearly or slowly in

class. Interpreter services were often inadequate. Some students had qualified interpreters, but still had difficulty understanding the lecture because the instructor covered the material so quickly. Some teachers wrote on the board while speaking -- students in these classes had difficulty following the interpreter and watching the board simultaneously. Some students relied on voice and lipreading to understand what was said in class. These students were unaccustomed to interpreters, and did not find even the most skilled interpreters helpful.

Students described NTID classes as very different from the traditional college classes on every point discussed above. They said that NTID classes are small, and students feel comfortable asking questions in class. The teachers understand the needs of deaf learners -- they are willing to repeat, speak slowly and clearly, and use sign language. Teachers expect students to see them outside of class, and are accessible. The pace of classes at NTID is slower, and reading materials are rewritten with the skill levels of hearing-impaired college students in mind. The focus of instruction is more applied than theoretical, and students are given opportunities for hands-on experience. Students feel they are able to understand most or all of what is taught in the NTID class.

The following quotations illustrate the kinds of distinctions transfer students made between their prior college classes and classes at NTID:

(At NTID)... I watch and understand more clearly with the books that tell me how to do it on the press or camera, its pretty easy. But at (regular college) some of the books are pretty hard, some instructors... are very hard... NTID is more clear... They explain to me and I understand... because I understand clearer with lipreading and sign language... My old school they taught fast... At NTID its quieter and they repeat stuff and they move slower.

I like the classes with the teachers who know sign language. They take their time. They understand. Its better than at the hearing college.

(At NTID) the explanations are clearer... I like teachers who sign rather than the interpreters. (With interpreters) you have to look back and forth. Its hard to understand, to figure out what they're specifically talking about. When they (teachers) sign, I feel free to ask questions.

I don't care about the sign language, but I'm a real good lipreader and the small class and going slower, it helps me to understand completely. That's what I like about NTID.

I like my program (at NTID) much more than at my community college. The professors really help me to communicate and

understand. And the projects go slower, and many times you go through the book. You have time to study, and you have time to talk with the teacher.

Here most of the teachers use sign language and I understand clear. I like teachers who use oral and sign language both -- its easier for me. In a hearing college the hearing students they don't know sign language and they talk all the time, and also, they process fast. Here it's not processed quick or fast -- it's done slowly. They make sure that the students understand... (at other) college it's was too fast and I couldn't understand very much. Here its more clear.

Differences between traditional college classes and NTID classes are summarized in Table 1.

Insert Table 1 about here

Discussion

Traditional Colleges Versus NTID: A Question of Support Services or Educational Models?

In the field of deaf education, the current concept of "least restrictive environment" is generally interpreted to mean "mainstreaming." Mainstreaming is built upon the notion that

hearing-impaired students can be "made equal" to hearing students if they are provided access to traditional classroom communication through interpreters, notetakers, and tutors. Once given these supports, hearing-impaired students are expected to compete successfully with their hearing peers. Failure is attributed to the hearing-impaired student's lack of innate ability or effort rather than to the educational environment or method of instruction.

The students we interviewed were not successful in a traditional college setting. In some cases, their difficulties could be traced to inadequate support services. In other cases, students had interpreters, notetakers and tutors, and were still unsuccessful. While the quality of support services in traditional colleges certainly needs to be improved, there are and probably will continue to be a significant number of hearing-impaired students for whom support services, as they traditionally are defined, are not enough.

When we examine transfer students' descriptions of differences between classes at the traditional college and classes at NTID, as summarized in Table 1, it is clear that NTID provides more than traditionally defined support services. The NTID classroom is a different educational environment, built upon state-of-the-art information about the methods by which hearing-impaired people are most likely to learn. A slower pace, teachers who are aware of the needs of hearing-impaired students, small

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classes, direct communication, and specially designed instructional materials are among the essential ingredients of this educational environment.

Given the experiences of the transfer students in our study, it may be useful to expand the concept of support services to include different educational environments, as illustrated in Table 2.

Insert Table 2 about here

Central to the development of a postsecondary educational model for the hearing impaired is the idea that an individual student may have instructional needs that vary over time or from subject to subject. For example, a student may require separate classes and modified instructional materials for a course in English Composition, but be successful with minimal support in a regular class for Differential Calculus. Another student may require separate classes in all subjects during the first year of college, add a few traditional classes during the second year, and complete the third and fourth years in regular classes with interpreter and notetaker support.

A continuum of alternatives such as those described in Table 2 is meaningful only if such alternatives exist and are accessible. Sometimes these alternatives are represented nationally, that is, a student can choose between a special

college like Gallaudet, a college for hearing students which has an established support program for hearing-impaired students, or a traditional college such as those attended by the students in our study. However, students in these settings who decide they need a different level of support generally must transfer in order to meet their changing needs.

We propose a postsecondary educational model for the hearing impaired in which the changing needs of individual students are accessible on one campus. Such a model would include the continuum of educational environments outlined in Table 2, from which hearing impaired students select appropriate levels of support. We further suggest that the element of accessible choice inherent in such a model reflects most closely the spirit of "least restrictive alternative," since it facilitates participation of hearing-impaired students with different educational needs within a mainstream postsecondary campus.

We are not suggesting that NTID at RIT is the only, or necessarily the best program for all hearing-impaired students seeking a postsecondary education. What is important is that hearing-impaired students have access to a complete range of educational alternatives through NTID at RIT -- the special learning environment within NTID programs, as well as the state-of-the-art in traditional support services for students who cross register at RIT. The presence of NTID on the RIT campus also makes possible many intermediate points along the educational

continuum -- RIT teachers are more aware of the needs of deaf students than are most traditional college teachers, and efforts are made to accommodate the hearing-impaired student in the mainstreamed class.

Finally, hearing-impaired young adults have the opportunity to socialize with both hearing impaired and hearing peers at NTID. As most of the students noted in their interviews, social life is an important part of college. Many of these students were left out of social life at their first college, due to communication barriers with hearing peers, or because they had to put in so much extra time and effort to succeed in the traditional college class that they had no time to socialize. Both of these problems were resolved at NTID -- students were able to manage their academic requirements and participate in social activities.

Limitations of the Study and Recommendations for Future Research

This study was exploratory. The interviews reflect the perspectives of a group of students who transferred to NTID at RIT from a traditional college. While the findings are useful in understanding the experiences and needs of these students, they should not be generalized to all hearing-impaired students or to students who transfer to NTID at RIT from colleges which offer different types of supports and services. Similarly, these interviews cannot capture the experiences of those hearing-impaired students who successfully complete their postsecondary

educations at traditional colleges, or who withdraw from the traditional college to enter the workforce. Future research is recommended which explores the experiences of students in these other groups.

Since our proposal for a postsecondary educational model for hearing-impaired students is based in large part on interviews with a select group of subjects, it too is open to revision as more information is gathered from other deaf learners who have had different college experiences. However, we expect that it would remain essentially viable, because the proposed model is based on a range of alternatives designed to meet a variety of student needs, at least for those students who require different levels of support across time and subject matter. We recommend that colleges providing a range of alternatives for hearing-impaired students on one campus, such as NTID at RIT, become a focus of future research. Central questions for further study include the degree to which hearing-impaired students use the range of options available to them over the course of their college career, and the impact of social mainstreaming on hearing and hearing impaired students. As we learn more about "what works" and "what doesn't work," we can develop programs which are more responsive to the needs of hearing-impaired young adults.

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Author Notes

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Table 1

Differences Between Regular College Classes and NTID Classes

REGULAR COLLEGE	NTID
-large class size	-small class
-focus on abstract	-focus on applied, hands-on experience
-teachers don't understand deafness	-teachers understand deafness
-communication difficult	-communication direct
-students miss a lot of lecture	-students understand most or all of lecture
-pace too fast	-slower pace
-students not comfortable asking questions in class	-students comfortable asking questions
-teachers inaccessible	-teachers accessible
-reading materials too difficult	-materials tailored for deaf students

Table 2

Continuum of Educational Alternatives

REGULAR COLLEGE CLASS, TRADITIONAL EDUCATIONAL ENVIRONMENT	REGULAR COLLEGE CLASS, INTERPRETER, NOTETAKER, TUTOR	SPECIAL COLLEGE WITHCLASS, MODIFIED EDUCATIONAL ENVIRONMENT